

## The Second Representative of the Family Nehypochthoniidae Found in Mishima City of Central Japan (Acari: Oribatida)

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**Abstract.** The second species of the North American genus *Nehypochthonius* was found from the forest soil in Mishima City of Central Japan. The new species, *Nehypochthonius yanoi*, differs from the single known species of the genus, *N. porosus* Norton et Metz, 1980, in the smooth integument of body, the notogaster not broadened posteriorly, the notogastral setae  $d_3$  shorter than  $h_1$ , the seta  $d$  on genu I coupled with solenidion and the smaller body size.

**Key words:** Oribatida, Nehypochthoniidae, *Nehypochthonius yanoi*, new species

Norton and Metz (1980) described from the United States an unusual oribatid mite, *Nehypochthonius porosus*, representing a new genus *Nehypochthonius* and a new family Nehypochthoniidae. In the summer of 2000, an unknown species of oribatid mite was found from the forest soil of *Chamaecyparis obtusa* (Siebold et Zucc.) Endl. in Mishima City of Central Japan. After a close examination, the species was found undoubtedly to be the second member of the family, though genu I bears seta  $d$  coupled with solenidion, and is described below as a new species.

### *Nehypochthonius yanoi* sp. n.

(Fig. 1)

**Measurement.** Body length 594 (range 560-623)  $\mu\text{m}$ , width 284 (range 248-310)  $\mu\text{m}$ .

**Prodorsum.** Rostrum angular, with an angle of 90-100 degrees. Rostral setae situated close together, almost  $5 \times$  as long as their mutual distance; the right and left setae rarely arranged side by side, one of them being situated more anteriorly than the other. Lamellar setae located posteriorly, close to bothridia, nearly as long as or a little longer than rostral setae. Interlamellar setae very long, about  $1.5 \times$  as long as their mutual distance and more than  $3 \times$  as long as rostral setae. Exobothridial setae *exa* and *exp* very short. Sensillus a little shorter than interlamellar seta, mostly with 9 (range 8-11) long pectinations and several minute spines (Fig. 1C).

**Notogaster.** Notogaster shield-shaped, almost with parallel sides, the widest part located rather anteriorly. Posterior part showing a pair of concavities with fine wrinkles. The other part glabrous, without foveolation. Holotrichous, with 16 pairs of notogastral setae of various sizes;  $h_1 = h_2 = e_2 > ps_1 > e_1 > ps_2 = c_1 > d_3 > d_2 > d_1 > c_2 > c_3 > h_3 > ps_3 = f_2 > f_1$ .

**Ventral side.** Epimera I - II separated medially, epimera IV fused together. Epimeral setation: 3 - 1 - 3 - 3. Genital opening boat-shaped with rounded anterior margin, wider posteriorly than anteriorly; genital plate glabrous, without striation and with 8 setae;  $g_3$ ,  $g_5$  and  $g_7$  shorter than the remaining setae (Fig. 1F). Anal setae 3 pairs, adanal setae 3 pairs and aggenital setae 2 pairs.

**Gnathosoma.** Adoral setae  $or_1$  bifurcate;  $or_2$  and  $or_3$  smooth and similar in length. Palpal solenidion strongly curved. Movable digit on chelicera well developed, extending a little beyond fixed digit; cheliceral seta *chb* positioned dorsolaterally, never reaching tip of fixed digit.

**Legs.** All legs tridactyle, each with two large lateral claws and a reduced central claw (Fig. 1G). Setal formulae (trochanter to tarsus, famulus included): leg I (I - 6 - 5 - 6 - 23); II (1 - 6 - 5 - 5 - 16); III (2 - 3 - 3 - 5 - 15); IV (2 - 3 - 3 - 4 - 13). Solenidiotaxy: leg I (2 - 1 - 3); II (1 - 1 - 2); III (1 - 1 - 0); IV (1 - 1 - 0). On all legs seta  $d$  of genu and tibia coupled with the respective solenidion (Figs. 1D and 1E).

**Tritonymphs.** Body length 473 (range 430-520)  $\mu\text{m}$ , width 207 (range 190-230)  $\mu\text{m}$ . Mostly similar in morphology to adults except for monodactyle legs. Sensillus with 7-8 branches, smaller in the number than in adults.

**Type series.** Holotype (NSMT-Ac 11242): Kodomonomori in Kannon-do, Kawaragaya, Mishima City, Japan. 6-X-2001. Yoshinao Yano. 14 paratypes (NSMT-Ac 11243-11256) and 3

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Table 1. Distinguishing characters between *Nehypochthonius porosus* Norton & Metz and *N. yanoi* sp. n.

|  | <i>N. porosus</i>                               | <i>N. yanoi</i>                               |
|--|---|---|
| Body length                            | 721 (670-772) mm                                | 594 (560-623) mm                              |
| Integument                             | porose  | glabrous                                      |
| Branches of sensillus                  | 8-12  | 9-11  |
| Interlamellar seta                     | with inconspicuous sparse barbs                 | without barbs                                 |
| Seta <i>d</i> of genu I                | not coupled with solenidion                     | coupled with solenidion                       |
| Number of setae on genu IV             | 2   | 3   |
| Shape of notogaster                    | broader posteriorly                             | nearly parallel sided                         |
| Tip of rostrum                         | weakly pointed                                  | well pointed                                  |
| Notogastral seta <i>e</i> <sub>2</sub> | nearly equal in length to <i>e</i> <sub>1</sub> | appreciably longer than <i>e</i> <sub>1</sub> |
| RLN of seta <i>e</i> <sub>2</sub>      | 33.8  | 21.4  |



Fig. 2. The plantation of *Chamaecyparis obtusa* in Mishima City, the type locality of the new species, *Nehypochthonius yanoi*, and Mr. Y. Yano (13 years old) who discovered the new species.

paratypes (KPM-NJ0000050): the same data as holotype. Holotype and 14 paratypes are deposited in the collection of National Science Museum, Tokyo and 3 paratypes in the collection of Kanagawa Prefectural Museum of Natural History, Odawara.

**Etymology.** The specific name, *yanoi*, refers to Mr. Yoshinao Yano, a junior high school student (Fig. 2), who collected the new species during his study on soil animals around his house.

**Remarks.** The new species is distinguishable from the type species of the genus, *N. porosus* Norton et Metz, by (1) the smooth integument without porose or punctate structure, (2) the notogaster not broader posteriorly, (3) the notogastral setae *d*<sub>3</sub> shorter than *h*<sub>1</sub>, (4) the genital aperture with distinct outline and without striation, (5) the solenidia  $\omega_2$  and  $\omega_3$  on tarsus I similar in length, (6) the seta *d* on genu I coupled with solenidion  $\sigma$ , (7) the seta *d* and solenidion on genu IV inserted in separate alveoli, and (8) the smaller body size (Table 1).

References

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摘 要

J. Aoki, 2002. The Second Representative of the Family Nehypochthoniidae Found in Mishima City of Central Japan (Acari: Oribatida). *Bull. Kanagawa prefect. Mus. (Nat. Sci.)*, (31): 23-25. (青木淳一, 2002. ヤワラカダニ科の第2の種の三島市での発見. 神奈川県立博物館研究報告 (自然科学), (31): 23-25. )

2000年8月、静岡県三島市川原ヶ谷観音洞の子供の森公園のヒノキ林の土壤中から、1988年に北米ではじめて発見記載されたヤワラカダニ科(新称)Nehypochthoniidaeの第2の種(新種)が見つかった。発見者は三島市立北中学校1年(当時)の矢野義尚君で、新種の名は発見者にちなんで、ヤノヤワラカダニ *Nehypochthonius yanoi* と命名し、記載した。本種は、(1)体表が滑らかであること、(2)後胴体部が後方に向かって膨らまないこと、(3)胴背毛 *d*<sub>3</sub> が *h*<sub>1</sub> よりも短いこと、(4)生殖門の輪郭が明瞭であること、(5)第1脚付節の毛  $\omega_2$  と  $\omega_3$  がほぼ同じ長さであること、(6)第1脚膝節の背毛 *d* がソレニジオン  $\sigma$  と密着していること、(7)第4脚膝節の背毛 *d* とソレニジオン  $\sigma$  は近接しているが別々の毛穴から生じていること、(8)体長が小さいことなどにより、北米産の *N. porosus* Norton & Metz, 1980 から区別される。